

ANNOTATIONES ZOOLOGICÆ JAPONENSES

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On a Collection of Bryozoa from
the Straits of Corea.

By

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With 1 Plate.

The collection of Bryozoa described below was made by Mr. Tôshirô Kumada in 1917, then connected with the Fishery Station of Yamaguchi Prefecture, in the Straits of Corea. Though small in amount, it proves a most interesting one and comprises, so far as I can discover, forty-nine species, referable to twenty-six genera. This high percentage of novelties is not surprising when one remembers that but little is known of the Bryozoan fauna of the Japan Sea.

The material was dredged from various depths of 90-200 metres at several stations in that part of the Corean Straits bounded on the west by the line extending from Fusan to Shimonoseki, and on the east, by the line stretching from south of Ulsan to Hamada.

It is with great pleasure to acknowledge my indebtedness to Mr. T. Kumada for the privilege of working on this interesting collection.

To avoid constant repetition, the depth and the character of the bottom are given in the following table.

Station number	Depth in metres	Character of bottom. Percentage of sand	Locality.	
			Latitude N.	Longitude E.
I	93	100%	34° 29' 0"	130° 50' 0"
II	122	do	34 31 30	130 41 0
III	110	do	34 34 0	130 32 0
IV	146	90%	34 58 30	129 24 30
V	110	do	34 52 30	129 43 0
VI	110	100%	34 38 30	130 22 0
VII	91	do	34 22 0	130 35 30
VIII	100	do	34 20 0	130 24 30
IX	97	do	34 17 0	130 13 0
X	110	do	34 23 0	129 58 20
XI	110	do	34 30 0	129 51 0
XII	102	80%	34 37 0	129 43 0
XIII	128	do	35 26 0	130 53 0
XIV	100	70%	34 56 0	130 13 30
XV	110	90%	34 53 0	130 43 20
XVI	95	100%	34 30 0	130 50 0
XVII	119	do	34 33 0	130 43 0
XVIII	110	do	34 35 30	130 35 0
XIX	110	do	34 39 0	130 26 30
XX	119	90%	34 42 30	130 17 0
XXI	118	70%	34 46 0	130 8 0
XXII	113	do	34 50 0	129 58 0
XXIII	110	90%	34 56 30	129 39 0
XXIV	175	70%	35 24 30	129 52 0
XXV	146	do	35 22 0	130 5 0
XXVI	165	90%	35 20 30	130 17 0
XXVII	183	do	35 19 0	130 30 0
XXVIII	146	do	35 17 30	130 42 0
XXIX	113	80%	35 14 30	130 6 0
XXX	110	90%	34 59 30	130 54 0
XXXI	137	do	35 10 30	130 43 0
XXXII	200	do	35 20 30	130 31 30

List of the species embodied in this paper, with
notes on their distribution.

- 1.* *Crisulipora ijimai* OKADA.
- 2.* *Entalophora proboscidioides* SMITT.
- 3.* *Entalophora raripora* d'ORBIGNY.
- 4.* *Tubulipora atlantica*, var. *disticha* (ORTMANN).
- 5.* *Tubulipora tumida* SMITT.
6. *Proboscina japonica* n. sp.
- 7.* *Lichenopora imperialis* ORTMANN.
- 8.* *Lichenopora conica* ORTMANN.
- 9.* *Lichenopora novae-zelandiae* (BUSK).
10. *Cellularia peachii* BUSK.
- 11.* *Scrupocellaria diadema* BUSK.
- 12.* *Caberea climacina* ORTMANN.
13. *Caberea lata* var., *tsushimensis*, nov.
- 14.* *Euthryoides simplex* OKADA.
- 15.* Δ *Membranipora crassimarginata* HINCKS.
16. *Membranipora albida* HINCKS.
17. *Membranipora kumatae* n. sp.
18. *Membranipora striata* n. sp.
19. *Membranipora vibraculoides* n. sp.
20. *Membranipora crenulata* n. sp.
21. *Gargantua bidens* (HAGENOW).
- 22.* Δ *Steganoporella magnilabris* (BUSK).
- 23.* *Micropora lioticha* ORTMANN.
- 24.* *Cellaria triangularis* ORTMANN.
- 25.* *Retepora misakiensis* OKADA.
26. *Retepora polycrenulata* n. sp.
27. *Cribrilina biporosa* n. sp.
- 28.* *Microporella dimidiata* ORTMANN.
- 29.* Δ *Microporella ciliata* (PALL.).
- 30.* *Lepralia obtusata* ORTMANN.
- 31.* *Lepralia magnicella* ORTMANN.
32. *Escharoides geminata* ORTMANN.
- 33.* *Smittia aedeonelloides* ORTMANN.
- 34.* *Smittia marmorea* HINCKS.
- 35.* *Smittia landsborovii* (JOHNSTON).
- 36.* *Smittia trispinosa* (JOHNSTON).
- 37.* *Smittia trispinosa* var. *japonica* ORTMANN.
38. *Smittia perforata* n. sp.
- 39.* *Mucronella ellerii* MAC GILLIVRAY.
- 40.* Δ *Schizoporella ceciliae* (AUD.).
- 41.* *Schizoporella subhexagona* ORTMANN.
42. *Schizoporella auriculata* (HASSALL).
43. *Schizoporella quadrispinosa* n. sp.

- 44. *Schizoporella quadrangularis* n. sp.
- 45.* *Myriozoum superficiale* ORTMANN.
- 46. *Myriozoum marinense* BUSK var. *irregulatum*, nov.
- 47.Δ *Conescharellina angustata* d'ORBIGNY.
- 48.* *Aeonella tuberculata* BUSK.
- 49.* *Cellepora radiata* ORTMANN.

Glancing through the list given above, the species indicated by an asterisk are those known to occur on the Pacific coasts of the Empire, and are very much more numerous as compared with those occurring in the Japan and China Seas. As may be seen from the above, they number thirty one out of a total of forty-nine species in all. Five species indicated by a triangular mark are those which have hitherto been recorded from the China Sea.

Generally speaking, there occur in the straits two different species complexes, northern and southern, the latter being far more richer than the former. However, the western passage of the straits seems to be the favourable habitat for the species of an arctic nature, while the eastern passage appears suitable for those which flourish in the southern seas. This fact appears to be in favour of the view that the distribution of the marine animals stands in some intimate relation to the physical condition of the sea.

Among the species recorded above, the forms, which are of wide distribution in the straits, are as follows: *Tubulipora atlantica* var. *disticha* ORT., *Cellaria triangularis* ORT., *Caberea lata* var. *tsushimensis* nov., *Cellepora radiata* ORT. and *Conescharellina angustata* d'ORBIGNY.

In the collection there are contained no examples of such species as *Microporella malusii* AUD., *Cribrilina radiata* MOLL., *Caberea lata* BUSK, *Bugula neritina* (L.), *Crisia eburneo-denticulata* SMITT and *Lichenopora radiata* (AUD.), which are found widely distributed in the China Sea and on the Pacific side of Japan. Doubtless they will be discovered in the Straits of Corea.

Order **Gymnolæmata.**

Sub-order **Cyclostomata.**

1. *Crisulipora ijimai* OKADA.

Crisulipora ijimai, OKADA, 1917, Annot. Zool. Jap., vol. ix, pt. 3, pp. 343-345.

This species is represented in the collection by a small fragment and colony, collected at the stations x and xi.

2. *Entalophora proboscidioides* SMITT.

Entalophora proboscidioides, SMITT, 1872, Flor. Bry., x, p. 11, pl. iv, figs. 26, 27.

A single small fragment, which may be referable to this species, was obtained at the station ix.

3. *Entalophora raripora* d'ORBIGNY.

Entalophora raripora, d'ORBIGNY, 1847, Prod. pal. strat., p. 267.

Pustulipora proboscidea, MILNE EDWARDS, 1838, Ann. Sc. Nat. Zool., 2, ix, p. 219, pl. xii, fig. 2.

Entalophora proboscidea, CALVET, 1896, Ann. Univ. Ly., p. 267.

A single small fragment, referable to this species, was collected at the station x.

4. *Tubulipora atlantica*, var. *disticha* (ORT.).

Idmonea atlantica, var. *disticha*, ORTMANN, 1890, Arch. f. Nat., 56, p. 58, pl. iv, fig. 20.

Several examples of the present species were found growing on certain worm-casts, collected at the stations ix, x, xii and xxix.

5. *Tubulipora tumida* SMITT.

Tubulipora tumida, SMITT, 1872, Flor. Bry., p. 119, pl. xx, fig. 7.

Idmonea atlantica, var. *tenuis*, BUSK, 1859, Monog. Poly. Crag., p. 146.

Idmonea tumida, WATERS, 1904, Journ. Linn. Soc., xxix, p. 168, pl. xxi, figs. 4, 5.

Included in the collection is a single small fragment, referable to this species. It was procured at the station ix.

6. *Proboscina japonica* n. sp. (Fig. 21.)

Zoarium consisting of dichotomously branching slender bands which widely diverge at irregular intervals and encrust a Brachiopod shell. Zooecial tubes of a small narrow cylindrical shape, arranged in irregular transverse rows and provided with thin orbicular peristomes which are slightly raised above the surface of the zoarium.

This new species is represented by a small dried colony which was found attached to the shell of a certain Brachiopod, collected at the station xxxi.

7. *Lichenopora imperialis* ORTMANN.

Lichenopora imperialis, ORTMANN, 1890, Arch. f. Nat., 56, p. 64, pl. iv, fig. 25.

This species is represented by several fragments collected from the depth of 91 metres at the station vii.

8. *Lichenopora conica* ORTMANN. (Figs. 22, 23.)

Lichenopora conica, ORTMANN, 1890, Arch. f. Nat., 56, p. 64, pl. iv, fig. 24.

A few colonies, referable to this species, were collected at the stations iv and xxix. Some of the examples were found attached to the stems of a certain hydroid.

9. *Lichenopora novæ-zelandiæ* (BUSK).

Lichenopora novæ-zelandiæ, HINCKS, 1884, Ann. Mag. Nat. Hist., 5, xiii, p. 362.

Discoporella novæ-zelandiæ, BUSK, 1875, Cat. Brit. Mus., iii, p. 32, pl. xxx, fig. 3.

Discoporella holdsworthii, BUSK, 1875, Cat. Brit. Mus., iii, p. 33, pl. xxx, fig. 4.

Lichenopora victoriensis, WATERS, 1890, Journ. Linn. Soc., xx, p. 284, pl. xv, fig. 4.

Lichenopora holdsworthii, THORNELY, 1912, Trans. Linn. Soc., ser. ii, 15, p. 157.

A complete small colony, which seems to be referable to this species, was obtained at the station v.

Sub-order Cheilostomata.

10. *Cellularia peachii* BUSK.

Cellularia peachii, BUSK, 1851, Ann. Mag. Nat. Hist., 2, vii, p. 82, pl. viii, figs. 1-4.

This species is represented in the collection by only a single very small fragment collected at the station vii.

Differing from the examples described hitherto, the specimen on hand is wholly destitute of spine on the upper and outer angles of zooecium. No species belonging to the present genus has, up to the present, been found in our territories.

11. *Scrupocellaria diadema* BUSK.

Scrupocellaria diadema, BUSK, 1852, Cat. Brit. Mar. Poly., i, p. 24, pl. xxviii, figs. 1-3.

Several fragments of a species, which may be identical with the present species, were brought up from the depths of 97-175 metres at the stations ix and xxiv.

12. *Caberea climacina* ORTMANN.

Caberea climacina, ORTMANN, 1890, Arch. f. Nat., 56, p. 22, pl. i, fig. 6.

Two small fragments of the present species were obtained at the station xii.

13. *Caberea lata* BUSK var. *tsushimensis* nov. (Figs. 12-14.)

Zoarium erect, forming a flabellate tuft of 25-43 mm. height. Branches dichotomously subdivided at rather wide intervals, on an average 2.5 mm. in breadth. Zooecia triserially arranged, elongate, slightly attenuated at the proximal portion; zooecial aperture orbicular, with very broad, outwardly recurved and spineless margin, occupying about anterior half of zooecia. Frontal avicularium conical, provided with semicircular mandible and beak usually situated below the zooecial aperture. On the intermarginal zooecium exists the avicularium on both sides at the proximal margin of the aperture; while on the latero-marginal zooecia it is placed only on the inner and lower margin. Lateral avicularia moderately large, with a broad triangular mandible. Ooecia small, not prominent, nearly quadrangular, with slightly arched and smooth lower margin; its summit reaching the lower apertural margin of superjacent zooecium. The occurrence of ooecium is not confined to the majority of intermarginal zooecia. Vibracular cells prominent, large, arranged in two rows extending obliquely downward

across the back of zooecia and meeting with their mate of the opposite side to cover the median line of the zoarium ; grooves very long, running obliquely downward along the median line of zoarial branch. Vibraculum serrated. From an elliptical pore situated laterally on the mid-dorsal surface of vibraculum, unsegmented rootlets are given off and run downward along the line of longitudinal vibracular cell-connection. Finally they join together to form a bundle for the attachment of the zoarium.

This new variety very closely resembles the type in essential characters, but may be distinguished from it by the different shape of zooecial aperture and the absence of the spinous processes situated at the margin of the zooecia. It is represented in the collection by several colonies, procured at various stations i, iv, vii, ix, xi, xii, xx and xxi, ranging from 93 to 119 metres.

14. *Euthryoides simplex* OKADA.

Euthryoides simplex, OKADA, 1921, Annot. Zool. Jap., vol. x, pt. 2, p. 21, text fig. 2.

Included in the collection are several small colonies with somewhat narrow and dichotomously subdivided branches, which were obtained at the station xxi. In spite of the absence of ooecia the specimens on hand present an aspect closely similar in their zoarial and zooecial features to the Sagami Sea form, so that I have here dealt with.

15. *Membranipora crassimarginata* HINCKS.

Membranipora crassimarginata, HINCKS, 1880, Ann. Mag. Nat. Hist., 5, vi, p. 71, pl. ix, fig. 1.

Two small colonies, referable to this species, were dredged. They were found attached to certain shells, obtained at the station xxx.

16. *Membranipora albida* HINCKS.

Membranipora albida, HINCKS, 1880, Ann. Mag. Nat. Hist., 5, vi, p. 81, pl. x, fig. 5.

The collection contained a small fragment and a colony, obtained at the station xvii. In spite of the presence of the frontal avicularia, they present an aspect nearly similar to the species described by Busk.

17. *Membraaipora kumatæ* n. sp. (Figs. 19, 20.)

Zoarium encrusting a shell so as to form a very thin, one-layered, membranous body. Zooecia oval, with an aperture at the front, bordered by a broadly rounded ridge which is granulated on the surface and finely crenated on the inner side. Operculum semicircular. Avicularia of medium size, about one-third the zooecia, marked with a calcareous, moderately broad and granulated margin; mandible semicircular, extending upward to the distal end of the colony. Ooecia globose, moderately small, slightly raised, presenting numerous small pores on the surface.

This new species is based upon two small colonies collected at the stations ix and x.

18. *Membranipora striata* n. sp. (Fig. 16.)

Zoarium forming a small irregular lace-work encrustation on certain worm-casts. Zooecia nearly oval, narrowing upward and downward, alternately arranged, and separated from one another by moderately broad and raised margins. Zooecia with an ooecium of a somewhat irregular outline, almost triangular or circular. Zooecial aperture somewhat oval, sometimes nearly triangular, closed by a membranous wall; margin faintly microtubercled, moderately thickened and slightly inclined inward, but not crenated on both inner and outer sides. One or two moderately stout spines frequently exist on the upper half of the apertural margin of the zooecia with an ooecium. Avicularia not found. Ooecia moderately small, sub-globular, smooth, provided with a slender and arched rib which slightly extends over the oral rim.

19. *Membranipora vibraculoides* n. sp. (Fig. 25.)

Zoarium forming a greyish lace-work encrustation on some shells. Zooecia assuming a radial arrangement, oval in outline, with calcareous margins which are slightly thickened and minutely crenated on the inner edge; zooecial aperture occupying the whole of the front, closed by a delicate membrane; operculum semicircular, with an arched semicircular chitinous bar. Ooecia globose, broadly rounded above, minutely

punctured on surface, with distinctly arched lower margin. Avicularia placed on the lateral side of each zooecial upper margin, with a triangular vibraculoid mandible which is curved and pointed at ends.

This new species is represented by a small colony which was obtained at the station xvii.

20. *Membranipora crenulata* n. sp. (Fig. 24.)

Zoarium encrusting the stem of *Myrionozoum marionense* var. *irregulatum* nov., and forming a delicate milky white net-work. Zooecia arranged in linear series, large, irregularly quadrangular, with moderately broad and raised calcareous border which is minutely crenated on the inner margin. The border is marked all over with slight transverse striæ and irregularly microtubercled on the lower portion. Zooecial aperture membranous, occupying the whole of the front. Operculum small, with arched chitinous rim, opening close to the calcareous arched upper border. Avicularia of medium size, oval, placed on the lower inner margin, slightly projecting into the membranous front wall, provided with semicircular mandible and distinctly crenated beak at the outer margin.

This new species is represented by a dried fragment and a small colony, collected at the station i. Although closely resembling *Membranipora serrulata* (B.) in many respects, it differs from it chiefly in the possession of the frontal avicularia with a minutely serrated beak.

21. *Gargantua bidens* (HAGENOW).

Cellepora bidens, HAGENOW, 1846, Bryoz. Maäs. Kreideb., p. 9, pl. xi, fig. 16.

The present species is represented in the collection by a small encrusting colony, collected at the station x.

22. *Steganoporella magnilabris* (BUSK).

Membranipora magnilabris, BUSK, 1854, Brit. Mus. Cat., ii, p. 62, pl. Lxv, fig. 4.

Steganoporella magnilabris, BUSK, 1884, Chall. Rep., i, p. 75, pl. xviii, fig. 2.

Numerous fragments of this species were obtained at the stations i, ix and x. The zoarium forms a moderately delicate encrustation.

23. *Micropora lioticha* ORTMANN.

Micropora lioticha, ORTMANN, 1890, Arch. f. Nat., 56, p. 30, pl. ii, fig. 11.

A single small fragment, referable to this species, was procured at the station x.

24. *Cellaria triangularis* ORTMANN.

Cellaria triangularis, ORTMANN, 1890, Arch. f. Nat., 56, p. 32, pl. ii, fig. 13.

This species is very common in the straits. A large number of specimens were collected at several stations i, vii, ix, x, xi, xii, xvii, xx, xxi and xxiv, ranging from 91 to 145 metres.

25. *Retepora misakiensis* OKADA.

Retepora misakiensis, OKADA, 1920, Annot. Zool. Jap., vol. ix, pt. 5, pp. 616-618, pl. viii, fig. 1 & text fig. 1.

The present species is represented in the collection by numerous complete colonies and fragments, attached to a certain shell and worm-cast, which were brought up at the stations v, xi, xii and xxiv, from the depths of 102-175 metres.

26. *Retepora polycrenulata* n. sp. (Figs. 7-9.)

Zoarium erect, of a cup-like form and attached to a certain worm-cast by means of a short peduncle. Branches dorso-ventrally flattened and of a uniform width almost throughout. Fenestræ nearly similar in size and shape, elliptical, 0.8×1.3 mm. in dimension. Zooecia elongate-rhomboidal, more rarely irregularly quadrangular, arranged in alternating rows, furnished on surface with a few distinct tubercles of small size, which occur in scattered distribution, except along the lower margin of the zooecial aperture, smoothed and frequently perforated here and there by minute pores. Zooecial aperture circular, with thickened and raised margin; the lower margin presents a small labial fissure at the middle. Avicularia not found. Ooecia orbicular, weakly

dilated, showing a narrow fissure at the middle of the smooth surface; the lower margin gives rise to a lamina which extends some way into the zooecial aperture. Dorsal surface of zoarium weakly convex, divided by weak vibices into irregular areas, each of which is entirely devoid of avicularia.

The specimen serving as basis for the above description was collected at the station xi. In addition to this, numerous fragments were brought up at various stations iii, vii, ix and x. Characteristic of the present species is the entire absence of avicularia.

27. *Cribrilina biporosa* n. sp. (Fig. 6.)

Zoarium encrusting some shells. Zooecia arranged alternately but somewhat irregularly; front wall calcareous, slightly convex, marked with five linear series of pores, each on a radiating ridge, of which the first sometimes extends across the zooecium from side to side just below the lower margin of zooecial aperture, while the remaining four nearly radiate from a point midway between the lower margin of the zooecial aperture and the distal margin of the zooecium. Zooecial aperture nearly semicircular, arched above, straight below, closed by a chitinous operculum. Avicularia not found. Ooecia of medium size, globose, somewhat rounded above, marked on smooth surface with a faint median striation and on each side with a narrow oblong fenestra. The ooecial lower margin is distinctly arched at the median parts, while the lateral sides are somewhat prolonged below to form a kind of lamina.

The present species based upon the material from the station xvii closely resembles *Crib. philomela* Busk from off the Marion Island, but differs from it in a smaller number of shallow transverse fissures occurring on the zooecial surface on each side, as well as in the entire absence of suboral pore.

28. *Microporella dimidiata* ORTMANN.

Microporella dimidiata, ORTMANN, 1890, Arch. f. Nat., 56, p. 38, pl. iii, fig. 6.

Some small colonies, dried and preserved in spirit, of this species were collected at the stations vii and xvii.

29. *Microporella ciliata* (PALLAS).

Echava ciliata, PALLAS, 1766, Elenchus Zoophy., p. 38.

Microporella ciliata, BUSK, 1854, Cat. Brit. Mus., ii, p. 73, pl. lxxiv, figs. 1-2.

Microporella vibraculifera, HINCKS, 1883, Ann. Mag. Nat. Hist., 5, xi, p. 443, pl. xvii, fig. 2.

Some small colonies of this species were found attached to *Pecten* in association with *Lepralia magnicella* Ort., which was procured at the stations v and xi.

30. *Lepralia obtusata* ORTMANN.

Lepralia obtusata, ORTMANN, 1890, Arch. f. Nat., 56, p. 41, pl. iii, fig. 13.

The present species is represented in the collection by several colonies attached to some dead vivale shells as well as to the spine of *Echinus*, which came from the stations ii, xii and xvii.

31. *Lepralia magnicella* ORTMANN.

Lepralia magnicella, ORTMANN, 1890, Arch. f. Nat., 56, p. 39, pl. iii, fig. 8.

Three colonies, which seem to be referable to the present species, were found attached to the shell of *Pecten*, *Natica* and *Caryophyllia*, collected at the stations iv and v.

32. *Escharoides geminata* ORTMANN. (Figs. 17, 18.)

Escharoides geminata, ORTMANN, 1890, Arch. f. Nat., 56, p. 49, pl. iii, figs. 17a-b.

Numerous colonies of this species were brought up from the depths of 91-122 metres at several stations i, ii, vii, xvii, xx and xxix. They were found attached to the stem of some hydroid and anthozoid as well as to some worm-casts.

33. *Smittia adeonelloides* ORTMANN. (Figs. 1, 2.)

Smittia adeonelloides, ORTMANN, 1890, Arch. f. Nat., 56, p. 46, pl. ii, fig. 9.

Several fragments of the present species were collected at the

station i. Differing from the example described by Ortmann, the specimens before me have the zooecium which is generally provided with two avicularia on both sides.

34. *Smittia marmorea* HINCKS.

Smittia marmorea, HINCKS, 1880, Ann. Mag. Nat. Hist., 5, vi, p. 79, pl. ix, fig. 6.

Two small colonies, referable to the present species, were collected at the stations x and xvii. One of them was found attached to the shell of a certain Gastropod.

35. *Smittia landsborovii* (JOHNSTON.)

Lepralia landsborovii, JOHNSTON, 1849, Brit. Zocophy., ed. 2, p. 310, pl. Liv, fig. 9.

A small encrusting colony of this species was found attached to the spine of *Echinus*, collected at the station ii.

36. *Smittia trispinosa* (JOHNSTON).

Discopora trispinosa, JOHNSTON, 1838, Edinb., Phil., Journ., xiii, p. 322.

Lepralia trispinosa, JOHNSTON, 1849, Brit. Zocophy., ed. 2, p. 324, pl. Lvii, fig. 7.

Smittia trispinosa, HINCKS, 1880, Hist. Brit. Mar. Poly., pp. 353-355, pl. xlix, figs. 1-8.

The collection contained a small circular colony of the present species, which was seen attached to a shell, collected at the station xxiv. Instead of a large avicularium with a triangular mandible, the specimen before me is provided with a small oral one with a rounded mandible on one side of the zooecial aperture near the oral margin, as described by Hincks on the British specimens. No oral spine could be seen in the specimen examined.

37. *Smittia trispinosa* var. *japonica* ORTMANN.

Smittia trispinosa var. *japonica*, ORTMANN, 1890, Arch. f. Nat., p. 46, pl. ii, fig. 26.

There is in the collection a small fragment which may be referable to this variety. It was obtained at the station xxix.

38. *Smittia perforata* n. sp. (Fig. 26.)

Zoarium encrusting certain worm-casts, forming a thick, one-

layered, membranous body. Zooecia elongate, a little tapering below, arranged alternately and separated from one another by their marginal ridges, which are weakly crenated at the distal parts. Zooecial aperture broad, nearly quadrangular in outline, occupying about the anterior fourth of the zooecia and closed by a thin operculum with a distinctly arched valve; margin of aperture somewhat raised, arched above, slightly inserted at the middle, provided with two dental processes on both sides. Gymnocyst slightly convex, with numerous moderately large perforations on surface, except on the distal part of zooecium. Frontal avicularia very large, not sessile, placed on one side of the zooecial aperture, with a triangular and slightly curved mandible which is directed obliquely upward. Some of the zooecia are destitute of avicularium.

In the collection I have discovered several small fragments of this species. They were procured at the stations v, x and xvii.

39. *Mucronella ellerii* MAC GILLIVRAY. (Figs. 10, 11.)

Mucronella ellerii, MACGILLIVRAY, 1887, Cat. of the Mar. Poly. of Victoria, p. 27.

At the stations iii, vii, ix and xi were dredged numerous fragments, referable to the present species, which exhibit two zoarial forms, one forming an encrustation, the other not.

40. *Schizoporella cecilii* (AUDOUIN).

Fuistra cecilii, AUDOUIN, 1826, Expl., i, p. 239.

Schizoporella cecilii, HINCKS, 1880, Hist. Brit. Mar. Poly., p. 269, pl. xliii, fig. 6.

Numerous fragments and colonies, referable to the present species, were found attached to certain worm-casts and shells, collected at the stations v, vii, ix and xvii.

41. *Schizoporella subhexagona* ORTMANN.

Schizoporella subhexagona, ORTMANN, 1890, Arch. f. Nat., p. 51, pl. iv, fig. 3.

A small colony of this species was discovered attached to the stems of some hydroid, collected at the station i.

42. *Schizoporella auriculata* (HASSALL).

Lepralia auriculata, HASSALL, 1842, Ann. Mag. Nat. Hist., vii, p. 412.

Schizoporella auriculata, HICKS, 1880, Hist. Brit. Mar. Poly., p. 260, pl. xxix, figs. 3-9.

A small fragment of the present species was found attached to a shell, collected at the station ix from the depth of 79 metres.

43. *Schizoporella quadrispinosa* n. sp. (Fig. 15.)

Zoarium of a milky white colour, encrusting a shell to form a delicate membranous body. Zooecia arranged in linear series, elongate, sometimes of an irregularly quadrangular shape, having an indefinite margin inside which there exists a row of small pores; front wall convex and smooth. Zooecial aperture small, opening near the distal end of zooecium, forming a very shallow, broad sinus on the lower margin, which is somewhat thickened and raised. Operculum almost similar in shape to the aperture with a distinctly arched opercular valve. Four short spines generally exist on the upper margin of the zooecial aperture. Avicularia not found. Ooecia large, globose, with smooth surface and arched lower margin.

The type specimen was obtained at the station xvii.

44. *Schizoporella quadravicularis* n. sp. (Figs. 3-5.)

Zoarium encrusting to form a small plate, 2.5 mm. \times 3.5 mm. in dimension. Zooecia arranged in linear series, irregularly quadrangular or ovate, provided here and there on the front surface with prominently raised umbos of varying size. Zooecial aperture nearly circular, with moderately thickened margin and two dental processes on the lower lateral margins, forming a moderately large rounded sinus. In each zooecium there exist four, or rarely three, frontal avicularia, of which one is placed laterally just behind the orifice and the others occur near the lower margin; mandible semicircular, with a somewhat raised beak which is directed dorsally or oblique-laterally. Ooecia large, slightly raised, rounded above, with radiating ridges on surface, which are

occasionally divided dichotomously or trichotomously near the distal end.

The present new species is represented by a single small colony, collected at the station xx.

45. *Myriozoum superficiale* ORTMANN.

Myriozoum superficiale, ORTMANN, 1890, Arch. f. Nat., 56, p. 53, pl. iii, fig. 2.

Included in the collection is a single small fragment of a species which may be identical with the present species. It was dredged at the station xxiv from the depth of 175 metres.

**46. *Myriozoum marionense* BUSK. var.
irregulatum nov. (Figs. 27-31.)**

At the stations i, ix and xi were dredged numerous specimens, in which the zoarial branches are dichotomously subdivided, and sometimes present an anastomosing, or entangled, appearance. In general feature they are quite like Busk's, *Myriozoum marionense* but differ from it in the peculiar character of ooecia and the different arrangement of zooecia, as may be seen from the below. In my opinion, they may be considered to represent a variety of the species just described.

Ooecia large, rounded above, anteriorly presenting a flattened area where is seen a series of pores of varying size. Zooecia disposed irregularly, sometimes crowded together one upon another.

47. *Conescharellina angustata* d'ORBIGNY.

Conescharellina angustata, d'ORBIGNY, 1850-52, Pal. Franc., Terr. Crét., p. 447.

A score or more of colonies, referable to the present species, were brought up from the depths of 91-175 metres at several stations i, vii, xii, xv, xxi, xxiv and xxix. This represents the first species of the genus *Conescharellina*, discovered on our coasts.

48. *Adeonella tuberculata* BUSK.

Adeonella tuberculata, BUSK, 1884, Chall. Rep., p. 180.

Eschara lichenoides, BUSK, 1854, Cat. Brit. Mus., ii, p. 90, pl. cvi.

A few small fragments of this species were collected at the stations i, vii, ix and x, ranging from 91 to 110 metres.

49. *Cellepora radiata* ORTMANN.

Cellepora radiata, ORTMANN, 1890, Arch. f. Nat., 56, p. 56, pl. i, fig. 14.

Several colonies, which may be referable to this species, were found attached to some worm-casts and hydroid stems, collected at various stations i, ii, xi, xii, xvii, xx and xxiv.

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Literature.

In addition to the general literature, the following works have been consulted.

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- 11). DITTO, 1921; Report on a Collection of Bryozoa from the Bay of Bengal and other eastern Seas. Rec. Ind. Mus., vol. xxii, pt. 1, no. 8.
- 12). WATERS, Arth., 1921; Observations upon the Relationships of the *Selenariadæ*, *Conescharrellinidæ*, etc. Jour. Linn. Soc., vol. xxxiv.

Explanation of Plate.

1. *Smittia adeonelloides* ORTMANN. Portion of a colony. $\times 30$.
2. *Smittia adeonelloides* ORTMANN. Small fragment of a colony. $\times \frac{2}{3}$.
3. *Schizoporella quadravicularis* n. sp. Small colony. $\times \frac{2}{3}$.
4. *Schizoporella quadravicularis* n. sp. Zooecium with an ooecium. $\times 30$.
5. *Schizoporella quadravicularis* n. sp. Two zooecia, showing the situation of frontal avicularia and numerous micro-tuberculations on the frontal surface. $\times 30$.
6. *Cribrilina biporosa* n. sp. Two zooecia, one of which bears an ooecium. $\times 30$.
7. *Retepora polycrenulata* n. sp. Three zooecia. $\times 30$.
8. *Retepora polycrenulata* n. sp. Zooecium with an ooecium. $\times 30$.
9. *Retepora polycrenulata* n. sp. Natural sketch. $\times \frac{2}{3}$.
10. *Mucronella elleri* MAC GILLIVRAY. Natural sketch. $\times \frac{2}{3}$.
11. *Mucronella elleri* MAC GILLIVRAY. Four zooecia with well-projected mucros on the lower margin of zooecial aperture. $\times 30$.
12. *Caberea lata* var. *tsushimensis* nov. Portion of a colony. $\times 30$.
13. *Caberea lata* var. *tsushimensis* nov. Ventral aspect of a portion of branch. $\times 30$.
14. *Caberea lata* var. *tsushimensis* nov. Zooecium with an ooecium. $\times 30$.
15. *Schizoporella quadrispinosa* n. sp. Two zooecia, one of which bears an ooecium. $\times 30$.
16. *Membranipora striata* n. sp. Three zooecia bearing two ooecia. $\times 30$.
17. *Escharoides gemminata* ORTMANN. Three natural sketches. $\times \frac{2}{3}$.
18. *Escharoides gemminata* ORTMANN. Portion of a colony to show the arrangement of avicularia and ooecium. $\times 30$.
19. *Membranipora Kumatae* n. sp. Three zooecia and an avicularium. $\times 30$.
20. *Membranipora Kumatae* n. sp. Zooecium with an ooecium. $\times 30$.
21. *Proboscina japonica* n. sp. Natural sketch. $\times \frac{2}{3}$.
22. *Lichenopora conica* ORTMANN. Natural sketch. $\times \frac{2}{3}$.
23. *Lichenopora conica* ORTMANN. Portion of a colony, showing the arrangement of zooecia. $\times 50$.
24. *Membranipora crenulata* n. sp. A few zooecia in the adult stage, showing their arrangement and the avicularia on the lower margin of zooecial aperture. $\times 30$.
25. *Membranipora vibraculoides* n. sp. Four zooecia, showing the arrangement of zooecia and avicularia. $\times 30$.
26. *Smittia perforata* n. sp. Three zooecia, two of which bear triangular frontal avicularia and exhibit numerous perforations on the frontal surface. $\times 30$.
- 27, 28, 29. *Myrionozoum marionense* var. *irregulatum* nov. Natural sketches. $\times \frac{2}{3}$.
30. *Myrionozoum marionense* var. *irregulatum* nov. Portion of a branch to show the arrangement of zooecia, one of which bears an ooecium and some avicularia. $\times 30$.
31. *Myrionozoum marionense* var. *irregulatum* nov. Portion of a branch, showing the arrangement of zooecia and avicularia. $\times 30$.